Trend Study 16C-9-02

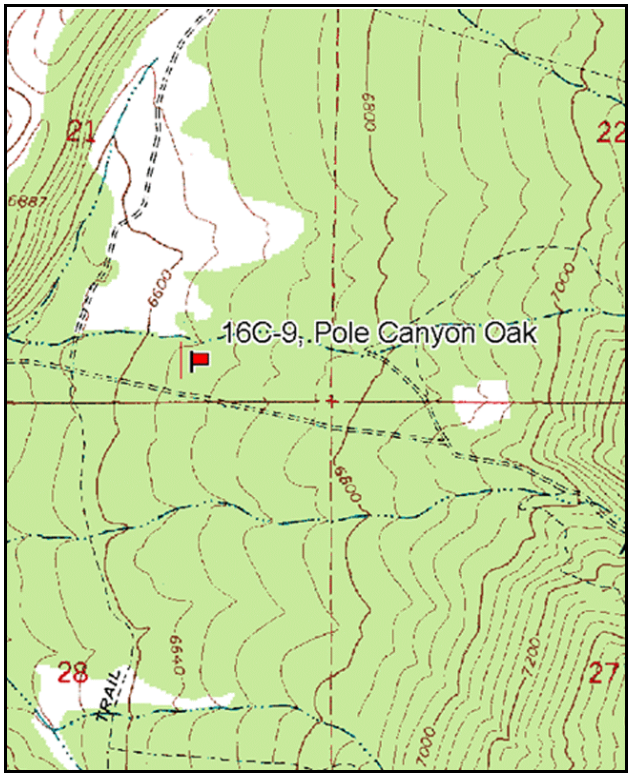
Study site name: Pole Canyon Oak . Vegetation type: Mountain Brush .

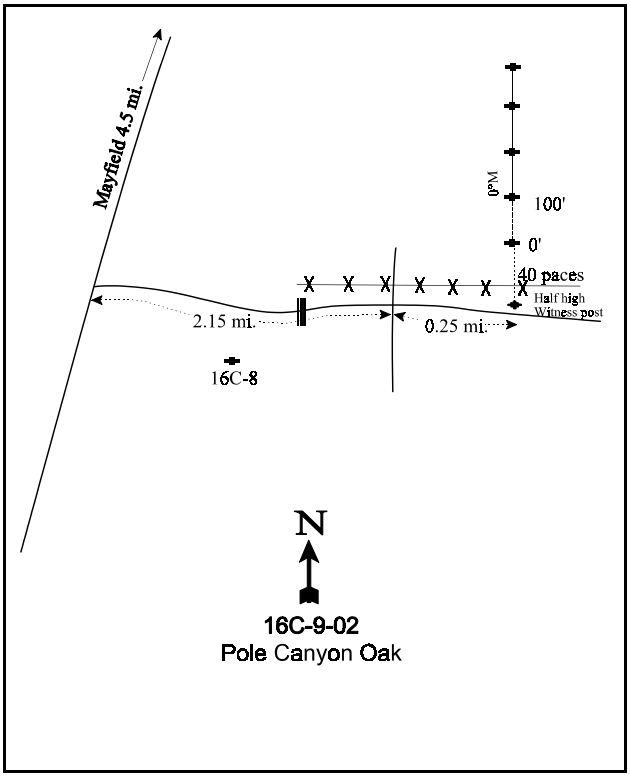
Compass bearing: frequency baseline 0 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 5 on 1ft.

LOCATION DESCRIPTION

Go south from Mayfield through Arapien Valley for 4.5 miles to the Pole Canyon Road. Turn east and go 2.15 miles, passing study number 16C-8 and crossing a cattle guard to a 4-way intersection (South Hollow Road). From the intersection, go east (straight) for another 0.25 miles to a half high witness post on the north side of the road. The 0-foot baseline stake (marked by browse tag #9042) is 40 paces due north.





Map Name: Mayfield

Diagrammatic Sketch

Township 20S , Range 2E , Section 21

GPS: NAD 27, UTM 12S 4322125 N 440234 E

DISCUSSION

Pole Canyon Oak - Trend Study No. 16C-9

This study is located on the south end of South Hollow, up Pole Canyon on Division property. It samples a mixed mountain brush community dominated by oak, pinyon, and juniper. The site lies on a gentle, west facing slope at 6,600 feet in elevation. Some of the area was experimentally treated with herbicide, in strips to remove the dense overstory of oak. However, this study does not lie within a treated area. It receives moderate use by deer as indicated by pellet group data. Pellet group transect data taken in 2002 estimated 88 deer days use/acre (217 ddu/ha). Elk, cattle, and sheep use was light.

Soils are similar to those at the Pole Canyon chaining study (16C-8), which are a Fontreen cobbly loam in the Upland Stony Loam range. The soil at the site is shallow with abundant rock and pavement on the surface and throughout the profile. Effective rooting depth is estimated at only about 9 inches. Chemical and textural analysis places soils in the loam category with neutral reactivity (pH of 7.2). Percent bare soil has slowly but steadily increased from 11% in 1989 to 17% in 2002. Litter cover has remained high during all readings at over 60%, but most of the litter is found underneath trees and shrubs. Most of the areas of bare soil are in the interspaces between trees and shrubs. This is where the majority of the erosion occurs. The erosion class assessment was determined as slight in 2002.

The dominant overstory is oakbrush in association with a considerable stand of juniper and pinyon. Point-center quarter data estimated 179 juniper trees/acre and 51 pinyon trees/acre in 2002. Average diameter of juniper trees was estimated at 5 inches, while pinyon averaged 6 inches. Oak is dense and has steadily increased over the site. Oak density was estimated at 3,265 stems/acre in 1989, increasing to 4,980 stems/acre in 1997, and 6,260 stems/acre in 2002. Utilization is mostly light on oak, with a small proportion of the population showing moderate and heavy use. Young oak plants are abundant, making up 42% of the population in 2002.

Several preferred browse species are present in lower densities. Mountain big sagebrush, bitterbrush, true mountain mahogany, and serviceberry are the most important of these. Mountain big sagebrush is the most common understory shrub with an estimated density of 780 plants/acre in 2002, a decrease from 960 plants/acre in 1997. The loss in density is due to an increase in the number of dead plants. The decadent age class made up almost the entire population in 1989 (97%), and the majority of the population had poor vigor (73%). Decadence declined to 42% in 1997, but again increased to 72% in 2002. No young plants were sampled in 2002, a decline from only 40 plants/acre in 1997. The entire population was classified as being heavily utilized in 1989, but use decreased to light in 1997. In 2002, use was moderate to heavy with 23% of the population displaying heavy browsing. About one-third of the population showed poor vigor in 2002. Drought and competition with increasing tree canopy are negatively impacting sagebrush on this site.

Bitterbrush has a stable density at just over 500 plants/acre. The population has shown normal vigor and no decadent plants in all readings. Use has been moderate to heavy in all years. True mountain mahogany had an estimated density of 180 mature plants/acre in 2002. The population is moderate to heavily utilized, but vigor is normal. All of the preferred browse species showed any recruitment from young plants in 2002. Low reproduction is likely due to a combination of competition with the dense overstory of pinyon-juniper and oak as well as drought prior to and during the 2002 sample. Annual growth for all of the preferred species averaged 2 inches or less in 2002. This site is a good candidate for treatment.

The herbaceous understory is sparse and is not significant in the vegetative community. Heavy competition with woody plants limits sunlight and moisture for understory species. Herbaceous species provided only 7% of the total vegetation cover on the site in 2002. Although sparse in total cover, species diversity is moderately high with over 30 species of grasses and forbs being sampled on the site since it was established in 1989. The diversity of species indicates that with less canopy from pinyon, juniper, and oak, this site has the potential for a greater productive understory. Mutton bluegrass is the dominant grass with all other species having a quadrat frequency of 7% or less. Perennial forbs are less abundant than grasses with no species being particularly important. Annual species of both grasses and forbs are present but are not significant in the

composition. The herbaceous plants that are present grow mainly under the protection of woody plants, which leaves the large shrub interspaces devoid of vegetation. A treatment to decrease woody overstory cover and the subsequent seeding of herbaceous plants should be considered to improve the vegetative community.

1989 APPARENT TREND ASSESSMENT

The site appears to have good potential. The herbicide treatments in the area will help demonstrate the possibilities for rehabilitation of this important winter range. Opening up the canopy by eliminating oakbrush cover should stimulate the herbaceous understory and reduce competition for key browse species. Current data indicators point to a downward vegetative trend on the undisturbed site. The soil condition is poor with sheet erosion causing plant pedestalling and root exposure.

1997 TREND ASSESSMENT

With total canopy cover at 35% (oak, pinyon, and juniper), the herbaceous understory will continue to remain very low or will decline even further. The herbaceous understory only contributes to 10% of the total cover. Browse and tree cover is not as efficient at protecting soils from high intensity summer storms as herbaceous cover is. The only mitigating characteristic of the site is that slope is only about 2-3%. Percent bare soil has increased since 1989 (11% to 14%). Trend for soil on this site is slightly down with continued soil loss at a moderately low rate. Preferred browse consists of mountain big sagebrush, true mountain mahogany, and antelope bitterbrush. Together they make up only 18% of the total browse cover. In past years they were mostly classified as decadent, now they all have improved vigor and mostly light to moderate use. Gambel oak alone contributes 43% of the browse cover. Individuals that are not out of reach show light to moderate use. For preferred browse trend appears to be stable, but if canopy cover continues to increase, they will decline in vigor competing for sunlight and moisture. The herbaceous understory is a very minor component of this plant community as it only contributes a total of 4% cover. This is one of the lowest values we have recorded in the pinyon-juniper type. The trend for the herbaceous understory is down, with the overall sum of nested frequency value for perennial species declining.

TREND ASSESSMENT
soil - slightly down (2)
browse - stable (3)
herbaceous understory - down (1)

2002 TREND ASSESSMENT

Trend for soil is stable. Bare interspaces between trees and shrubs show erosion, but it is not extreme due to the gentle slope. Although trend is stable, soil conditions are poor. Herbaceous vegetation remains low and most of the litter cover is found underneath the oak and pinyon-juniper trees. Browse trend is slightly down. The preferred species have no measurable recruitment by young plants and use is moderate to heavy. Mountain big sagebrush is the key species as it has the highest density of all the palatable species. Mountain big sagebrush has very high decadency at 72%, and one-third of the population displays poor vigor. It is likely that the preferred browse will continue to decline, especially if oak brush continues to increase in the future. The herbaceous understory has a slightly downward trend as sum of nested frequency declined for both perennial grasses and forbs. The understory component is already sparse on this site and cannot afford further declines.

TREND ASSESSMENT
soil - stable (3), but in poor condition
browse - slightly down (2)
herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --
Herd unit 16C, Study no: 9

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'89	'97	'02	'89	'97	'02	'97	'02
G	Agropyron spicatum	9	14	7	4	6	4	.08	.08
G	Bromus tectorum (a)	-	$_{b}$40	$_{a}$20	-	16	7	.82	.03
G	Oryzopsis hymenoides	$_{b}$42	$_{a}$15	$_{a}$11	21	8	6	.11	.18
G	Poa fendleriana	$_{b}$143	$_{a}$75	$_{a}$84	58	30	35	2.24	1.56
G	Poa pratensis	-	11	-	-	4	-	.07	-
G	Poa secunda	$_{b}$21	$_{a}$5	$_{ab}$8	12	3	5	.06	.02
G	Sitanion hystrix	-	-	1	-	-	1	-	.00
G	Stipa comata	$_{ab}$6	$_{b}$15	$_{a}$1	2	8	1	.11	.00
Total for Annual Grasses		0	40	20	0	16	7	0.81	0.03
Total for Perennial Grasses		221	135	112	97	59	52	2.69	1.86
Total for Grasses		221	175	132	97	75	59	3.51	1.89
F	Agoseris glauca	1	3	3	1	1	1	.03	.00
F	Arabis spp.	-	5	-	-	2	-	.01	-
F	Astragalus consobrinus	2	-	-	1	-	-	-	-
F	Astragalus spp.	2	-	-	2	-	-	.00	-
F	Balsamorhiza sagittata	3	-	-	1	-	-	-	-
F	Castilleja linariaefolia	1	2	3	1	1	1	.00	.00
F	Chaenactis douglasii	5	8	-	3	4	-	.02	-
F	Comandra pallida	$_{a}$-	$_{b}$33	$_{a}$-	-	15	-	.10	-
F	Collinsia parviflora (a)	-	23	33	-	11	15	.05	.07
F	Crepis acuminata	-	2	-	-	1	-	.03	-
F	Cymopterus spp.	$_{a}$-	$_{b}$19	$_{b}$26	-	11	14	.08	.07
F	Erigeron divergens	-	2	3	-	1	1	.00	.03
F	Eriogonum umbellatum	7	9	1	4	5	1	.07	.00
F	Lactuca serriola	-	1	-	-	1	-	.00	-
F	Lesquerella spp.	-	7	-	-	3	-	.04	-
F	Lomatium spp.	$_{b}$66	$_{a}$3	$_{a}$-	35	2	-	.01	-
F	Machaeranthera spp	-	3	-	-	1	-	.00	-
F	Microsteris gracilis (a)	-	$_{b}$15	$_{a}$-	-	7	-	.03	-
F	Penstemon spp.	-	3	-	-	1	-	.03	-
F	Petradoria pumila	-	-	2	-	-	2	-	.18
F	Phlox longifolia	12	14	11	7	8	5	.11	.02
F	Ranunculus testiculatus (a)	-	10	16	-	5	7	.02	.03
F	Senecio multilobatus	5	7	-	2	3	-	.06	-
F	Taraxacum officinale	-	1	-	-	1	-	.01	-
F	Tragopogon dubius	1	-	-	1	-	-	-	-
F	Zigadenus paniculatus	1	2	-	1	1	-	.03	-

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'89	'97	'02	'89	'97	'02	'97	'02
Total for Annual Forbs		0	48	49	0	23	22	0.11	0.10
Total for Perennial Forbs		106	124	49	59	62	25	0.67	0.31
Total for Forbs		106	172	98	59	85	47	0.78	0.43

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 16C, Study no: 9

Type	Species	Strip Frequency		Average Cover %	
		'97	'02	'97	'02
B	Amelanchier alnifolia	5	2	.21	.03
B	Artemisia tridentata vaseyana	35	28	2.45	3.32
B	Cercocarpus montanus	7	8	1.54	.78
B	Gutierrezia sarothrae	7	6	.04	.18
B	Juniperus osteosperma	8	6	6.83	6.23
B	Opuntia spp.	1	3	-	.03
B	Pinus edulis	5	8	7.35	6.19
B	Purshia tridentata	11	14	2.77	2.57
B	Quercus gambelii	46	54	16.01	8.21
Total for Browse		125	129	37.22	27.57

CANOPY COVER -- LINE INTERCEPT
Herd unit 16C, Study no: 9

Species	Percent Cover	
	'97	'02
Amelanchier utahensis	-	.17
Artemisia tridentata vaseyana	-	3.17
Cercocarpus montanus	.4	1.83
Gutierrezia sarothrae	-	.25
Juniperus osteosperma	9.8	16.58
Pinus edulis	11.2	8.58
Purshia tridentata	-	2.00
Quercus gambelii	13.6	12.08

Key Browse Annual Leader Growth
Herd unit 16C , Study no: 9

Species	Average leader growth (in) '02
Artemisia tridentata vaseyana	1.8
Cercocarpus montanus	1.6
Purshia tridentata	1.7

Point-Quarter Tree Data
Herd unit 16C , Study no: 9

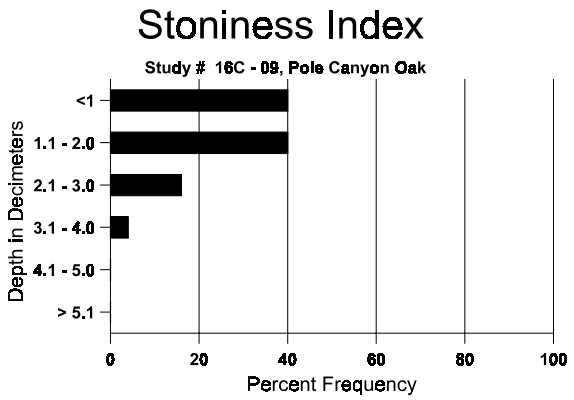
Species	Trees per Acre '97	Trees per Acre '02	Average diameter (in) '97	Average diameter (in) '02
Juniperus osteosperma	141	179	4.0	5.1
Pinus edulis	89	51	9.4	6.2

BASIC COVER --
Herd unit 16C, Study no: 9

Cover Type	Nested Frequency '97	Nested Frequency '02	Average Cover % '89	Average Cover % '97	Average Cover % '02
Vegetation	242	184	5.00	40.13	29.32
Rock	67	88	2.75	2.16	2.30
Pavement	155	152	13.75	5.42	5.69
Litter	390	392	67.00	59.63	66.83
Cryptogams	21	6	.50	.28	.21
Bare Ground	170	147	11.00	14.36	17.06

SOIL ANALYSIS DATA --
Herd Unit 16C, Study no: 09, Pole Canyon Oak

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
9.1	54.4 (11.3)	7.2	46.7	28.7	24.6	3.5	9.9	108.8	.7



PELLET GROUP FREQUENCY --
Herd unit 16C, Study no: 9

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'97	'02	⁄02	⁄02
Sheep	-	-	9	1 (2)
Rabbit	12	10	-	-
Elk	3	1	-	-
Deer	28	26	1140	88 (217)
Cattle	1	1	-	-

BROWSE CHARACTERISTICS --
Herd unit 16C, Study no: 9

AGE	YR	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Amelanchier alnifolia																		
S	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	-	-	-	-	-	-	-	1	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	1	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	3	-	-	1	-	-	-	-	-	4	-	-	-	80	43	23	4
	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40	27	16	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	
'97	00%	00%	00%	-60%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	0	Dec:	-
	'97	100		-
	'02	40		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	89	-	-	1	-	-	-	-	-	-	1	-	-	-	33	19	28	1
	97	21	2	-	3	-	-	-	-	-	26	-	-	-	520	29	33	26
	02	3	2	6	-	-	-	-	-	-	11	-	-	-	220	27	32	11
D	89	-	-	36	-	-	-	-	-	-	9	-	-	27	1200			36
	97	19	1	-	-	-	-	-	-	-	11	-	-	9	400			20
	02	18	2	2	2	-	1	3	-	-	16	-	-	12	560			28
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	380			19
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	580			29

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	100%	73%	-22%
'97	06%	00%	19%	-19%
'02	10%	23%	31%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	1233	Dec:		97%
'97	960			42%
'02	780			72%

Cercocarpus montanus																		
M	89	-	-	1	-	-	-	-	-	-	1	-	-	-	33	60	55	1
	97	2	3	2	-	-	-	-	-	-	7	-	-	-	140	34	40	7
	02	-	-	3	1	1	4	-	-	-	9	-	-	-	180	34	37	9
D	89	-	-	-	-	-	1	-	-	-	1	-	-	-	33			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	100%	00%	+53%
'97	43%	29%	00%	+22%
'02	11%	78%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	66	Dec:		50%
'97	140			0%
'02	180			0%

Chrysothamnus depressus																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	9	12	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	0	Dec:		-
'97	0			-
'02	0			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus																		
M	89	-	-	3	-	-	-	-	-	-	3	-	-	-	100	3	2	3
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	89	-	-	4	-	-	-	-	-	-	1	-	-	3	133			4
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	100%	43%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	233	Dec:	57%
	'97	0		0%
	'02	0		0%

Gutierrezia sarothrae																		
Y	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	89	32	-	-	-	-	-	-	-	-	32	-	-	-	1066	9	9	32
	97	12	-	-	-	-	-	-	-	-	12	-	-	-	240	9	7	12
	02	11	-	-	-	-	-	-	-	-	11	-	-	-	220	8	9	11
D	89	2	-	-	-	-	-	-	-	-	1	-	-	1	66			2
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	03%	-79%
'97	00%	00%	00%	- 8%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	1165	Dec:	6%
	'97	240		0%
	'02	220		0%

Juniperus osteosperma																		
Y	89	4	-	-	-	-	-	-	-	-	3	-	1	-	133			4
	97	2	-	-	1	-	-	-	-	-	3	-	-	-	60			3
	02	1	-	-	-	1	-	-	-	-	1	-	-	1	40			2
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	3	-	-	-	-	-	2	-	-	5	-	-	-	100	-	-	5
	02	3	-	-	1	-	-	-	-	-	4	-	-	-	80	-	-	4
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	25%	+17%
'97	00%	00%	00%	-25%
'02	17%	00%	17%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	133	Dec:	-
	'97	160		-
	'02	120		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
S	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	2	-	-	-	-	-	2	-	-	-	40	7	12	2
	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40	6	4	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	
'97	00%	00%	00%	+60%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	0	Dec:		-
'97	40			-
'02	100			-

Peraphyllum ramosissimum																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	17	12	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'89	0	Dec:	-
'97	0		-
'02	0		-

Pinus edulis																		
S	89	-	-	-	-	-	-	2	-	-	2	-	-	-	66			2
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	2	-	-	-	-	-	1	-	-	3	-	-	-	60			3
	02	2	-	-	1	-	-	-	-	-	3	-	-	-	60			3
M	89	-	-	-	-	-	-	-	1	-	1	-	-	-	33	177	171	1
	97	2	-	-	-	-	-	1	-	-	3	-	-	-	60	-	-	3
	02	6	-	-	-	-	-	-	-	-	6	-	-	-	120	-	-	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	+45%
'97	00%	00%	00%	+33%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'89	66	Dec:	-
'97	120		-
'02	180		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
Y	89	-	-	1	-	-	-	-	-	-	1	-	-	-	33			1
	97	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	89	-	-	6	-	-	-	-	-	-	6	-	-	-	200	13	18	6
	97	5	15	3	-	-	-	-	-	-	23	-	-	-	460	13	49	23
	02	-	1	6	-	5	14	-	-	-	26	-	-	-	520	13	38	26

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	100%	00%	+57%
'97	56%	11%	00%	- 4%
'02	23%	77%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	233	Dec:	-
	'97	540		-
	'02	520		-

Quercus gambelii																		
S	89	36	1	-	-	-	-	12	-	-	49	-	-	-	1633			49
	97	9	-	-	6	-	-	-	-	-	15	-	-	-	300			15
	02	1	-	-	1	-	-	1	-	-	3	-	-	-	60			3
Y	89	68	1	-	1	1	-	-	-	-	71	-	-	-	2366			71
	97	65	5	-	22	-	-	-	-	-	91	1	-	-	1840			92
	02	108	-	-	22	-	-	-	-	-	130	-	-	-	2600			130
M	89	10	6	-	-	-	-	-	-	-	16	-	-	-	533	39	30	16
	97	90	37	1	11	-	-	5	-	-	119	25	-	-	2880	55	44	144
	02	151	8	6	-	-	-	3	6	-	108	-	66	-	3480	42	22	174
D	89	3	8	-	-	-	-	-	-	-	11	-	-	-	366			11
	97	6	2	-	5	-	-	-	-	-	6	1	-	6	260			13
	02	4	-	5	-	-	-	-	-	-	1	-	1	7	180			9
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	980			49
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	660			33

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	16%	00%	00%	+34%
'97	18%	.40%	02%	+20%
'02	03%	04%	24%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	3265	Dec:	11%
	'97	4980		5%
	'02	6260		3%

Tetradymia canescens																		
Y	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	33	Dec:	-
	'97	0		-
	'02	0		-